removed via the weir system so that any suspended sediment, eroded from the dikes and deposited material, will be retained. However, unlike the clarified effluent removed during dredging operations, the rainwater will be routed on-site via culvert to mean high water only and released to the marsh. The removal of run-off will be discussed further in Section 4.2.1.

3.2 Inlet Operation

The manner in which the inlet pipe is operated will be primarily determined by the quality of the sediment to be dredged. Previous estimates of containment area solids retention performance have been based on a channel sediment core boring determined to best represent the material likely to be present in this reach. Although this sample may be generally indicative of the quality of sediment to be encountered within Reach III of the ICWW in St. Johns County, more specific information will be obtained prior to future maintenance operations. This information will document the results of core borings taken within the shoal areas to be dredged, and will include, at a minimum, boring logs and a qualitative categorization of each strata of sediment, gradation curves and/or Atterberg limits, and suspended sediment-settling time curves for the aggregate from each boring location.

Subject to this event specific information which characterizes the quality of the sediment to be dredged, the following strategy of inlet operation within the containment area is suggested. This procedure, which is based on historical sediment information, is appropriate for sediments characterized as fine sand with significant components of organic silt and clay. It makes no attempt to segregate material grain size fractions by manipulating the inlet. Some segregation will occur naturally as a result of differential settling behavior, with the coarsest fraction settling out of suspension very rapidly, forming a mound in the area of the inlet. Successively finer fractions, characterized by lower settling velocities, will be deposited closer to the outlet weirs. The deposition of the finest fraction nearest the weirs is not expected to require intensive dewatering procedures because of the thin lift approach employed. The position of the inlet will be moved during disposal operations, but only to minimize the mounding of the coarser fraction of sediment and to distribute the deposition more uniformly. For the SJ-29 disposal area, this will entail a progressive extension of the inlet pipe northeastward from the point where it enters the containment area resting each extension on the mound formed by the previous inlet position. A minimum 100 ft distance must be maintained between the inlet and the inside toe of the dike to preclude erosion or undercutting of the interior dike slope. The resulting pattern of deposition will maintain a consistent slope from inlet to weir, minimize dead zones and channelization, and will reduce the requirement for grading the deposited material to re-establish the desired 0.2% slope between successive disposal operations.

An additional, although secondary, advantage to be gained through extending the inlet pipeline comes as a result of the dredge plant being necessarily shut-down to allow each extension section to be added. These operational intermissions, together with temporary shutdowns to move the dredge, effectively increase the retention time of the containment area, thereby increasing the solids retention efficiency of the basin. It should be noted, however, that preliminary analysis of containment area performance indicates that adequate effluent quality can be attained without requiring intermittent dredge operation.

3.2.1 Monitoring related to Inlet Operation

During active disposal operations, several monitoring procedures related to inlet operations will be required. Ponding depth, as previously mentioned, is a critical parameter for the optimization of containment area performance. It is desirable to maintain as great a ponding depth as possible, thereby increasing retention time, solids retention, and effluent quality. However, unbalanced hydrostatic forces resulting from too great a ponding depth under saturated foundation conditions can lead to slope instability, slumping, and the potential for dike failure. Obviously, the latter situation must be avoided at all costs. Therefore, ponding depth can be increased above the 2 foot minimum only under close monitoring, by visual inspection, of dike integrity. Indications of impending instability include evidence of seepage related to piping and foundation saturation at the outer dike toe, and small-scale slumping. If no effluent is released at the weirs, the design dredge output (i.e., 6430 c.y./hr slurry at a 20/80 solids/liquid mix, or 5144 c.y./hr liquid) will produce an increase in ponding depth of less than 0.32 ft/hr at the site SJ-29. This rate is slow enough to allow close continual monitoring of the entire dike perimeter. Ponding depth should not be permitted to increase beyond a maximum of 5 feet. Continuous monitoring of dike stability should be performed during periods when ponding depth is maintained above the 2 foot minimum.

Optimal containment area operating efficiency requires that flow through the basin approximate plug flow to the greatest degree possible, thereby minimizing the uneven distribution of flow velocities and sediment re-suspension, and maximizing retention time. Therefore, the pattern of sediment deposition should be monitored for indications of irregular distribution, channelization, and short-circuiting. If evidence of such anomalies is found, the inlet pipe should be repositioned until a more uniform depositional surface is formed.

Lastly, the dredge plant output should be periodically monitored at the slurry outfall within the containment area throughout dredging and disposal operations to confirm or refine dredge output specifications including volumetric output and slurry solids content. These parameters, in combination with the duration of actual dredge operation can be used as an independent measure of disposal volume for purposes of determining remaining site capacity. Additionally, disposal volume can be used with pre- and post-dredging bathymetric surveys of the channel, and topographic surveys within the containment area following disposal and dewatering of the deposition layer, to refine the bulking factor employed to translate in-site dredging volume to required disposal volume. Also, within the same monitoring program the quality of sediment dredged should be examined by typical laboratory techniques of soils analysis including the establishment of grain size distributions, settling velocities, specific gravity, and Atterberg limits, if appropriate. The results of this monitoring and analysis, together with measures of effluent quality, to be discussed in the following section, will provide a basis for the operational management of containment area performance and efficiency.

3.3 Weir Operation

Once the containment area is constructed and dredging and disposal operations have begun, the most effective way to control effluent quality is by changing the ponding depth and rate of flow over the weir through adjustments in the weir crest elevation. Prior to the commencement of dredging, the weir crest elevation should be set as high as possible to preclude the early release of effluent. The minimum initial elevation above the mean interior site grade should be equal to the maximum anticipated mean ponding depth of 5 ft. For site SJ-29, this will result in an initial weir crest elevation of +10.3 ft NGVD, or 2.0 ft above grade at the weirs, given an initial containment area interior slope of 0.2%, a distance from inlet to weir of 900 ft and a 0.5 ft weir operational head. As the deposited material reaches the base of the weirs, the weir crest elevation should be increased at approximately the same rate as the growth of the deposition layer. With the average depth of deposition per event projected to be 1.70 ft (Section 2.2.1), maintaining a mean ponding depth of 5.0 ft (5.9 ft at the weirs) will result in a weir crest elevation at the completion of dredging of approximately +12.0 ft NGVD.

Once dredging begins, the weir crest elevation should be maintained at its initial elevation until the ponded water surface approaches the weir crest. During this initial phase of operation in which no effluent is released, the discharge of the dredge plant should result in an increase in ponding depth of less than 0.32 ft/hr, and an increase in the ponded water surface elevation (ponding depth plus deposition layer) of less than 0.38 ft/hr. This relatively slow rise should allow for close continual monitoring of the entire dike perimeter for indications of slope instability, as discussed in the previous section. Inspection is most critical during the initial phase of operations, and during subsequent disposal periods when the ponded water surface is raised above its previous maximum elevation. Experience has shown that as the ponded water percolates into the interior dike slope, the fine suspended sediment is filtered by the coarser dike material. This reduces the permeability of the dikes and decreases the susceptibility of the dikes to piping and saturation.

As ponding depth increases above the 2 foot minimum design depth (or approximately 2.9 feet at the weirs), the decision must be made to initiate release of the supernatant. It is important to note that the weirs are only flow control structures and therefore cannot improve effluent quality beyond that of the surface water immediately interior to the weir crests. Thus, the decision to release must be based on the results of turbidity testing or suspended sediment concentration analysis conducted on the surface waters inside the weirs. These tests must reflect conditions at the maximum depth of withdrawal. For site SJ-29 this was determined from recommended WES procedures to be 2.11 feet, based on a design weir loading of 1.07 cfs/ft. If adequate water quality is not achieved prior to the ponded water surface reaching the initial weir crest elevation, the dredge plant must be shut-down until the surface water turbidity reaches acceptable limits, or until alternative measures such as the installation of turbidity screens or floating baffles are implemented. If the desired water quality is achieved at a ponding depth less than the initial weir crest elevation, the water surface should still be permitted to rise to the weir crest provided that dike integrity is not threatened.

Once flow over the weirs has begun and effluent of acceptable quality is being produced as indicated by effluent sample analysis, the hydraulic head over the weir becomes the most readily used criterion for weir operation. For a design weir loading of 1.07 cfs/ft, the operational static head has been calculated to be 0.47 ft. or 5.6 inches, based on an empirical relationship developed for sharp-crested weirs. This represents the operating head of water upstream of the weir at a point where velocities are small (1 to 2% of the weir loading rate).

Actual operating head over the weir can be measured on site by two methods. First, it can be determined by using a stage gage, located in the basin where velocities caused by the weir are small (at least 10 to 20 ft from the weir), to read the elevation of water surface and subtracting from it the elevation of the weir crest. The static head can also be determined indirectly by measuring the depth of flow over the weir. The ratio of depth of flow over the weir to static head has been shown to be 0.85 for sharp-crested weirs, yielding a design depth of flow for the SJ-29 facility of 0.40 ft or 4.8 inches. If the head over the weir, as measured by either method, falls below these design values as a result of unsteady dredge output or intermittent operation, effluent quality should increase. However, if the head exceeds these values, the ponding depth should be increased by adding a flash board, or dredging should be interrupted to prevent a decrease in effluent quality, unless of course maximum ponding depth has been achieved.

At all times, each of the four weir sections must be maintained at the same elevation to prevent flow concentration and a decrease in effluent quality related to an increase in weir loading. It is also important to prevent floating debris from collecting in front of the weir sections. This will result in an increase in the effective depth of withdrawal and a corresponding increase in effluent suspended solids concentration.

After dredging has been completed, the ponded water must be slowly released, allowing the flow over the weir to drop essentially to zero before the next flash board is removed. Monitoring of effluent quality should continue during this process, and if turbidity violates water quality standards the effluent must be retained until analysis of the interior surface waters indicates the suspended solids concentration to be within acceptable limits. The decanting process should continue in this manner until all ponded water is released over the weirs. Trenching and other dewatering techniques are considered post-dredging site operating procedures and are discussed in Section 4.0.

3.4 Monitoring of Effluent

Monitoring of effluent released from the SJ-29 disposal site will be an integral part of the operation of the facility. The containment area has been designed to produce effluent which meets the water quality standards for Class II waters as set forth in Chapter 17-3 of the Florida Administrative Code. These rules require among other things that actual site compliance be documented by results obtained from a comprehensive monitoring program. Therefore, the monitoring program should be in place at all times during active disposal operations. Effluent samples should be taken and analyzed as often as is practical. The minimum recommended sampling frequency is two times per eight hour shift.

Although the turbidity of the effluent is but one of 29 parameters addressed in the Florida state water quality standards, compliance with these standards has been historically based on turbidity alone for several reasons. Turbidity, is reliably measured in the field, and the only water quality parameter over which the containment area operator may exercise direct control. Moreover, turbidity is a strong indicator of general effluent quality since many contaminants, most notably the toxic metals, exhibit a strong affinity for fine particles. Thus, reducing turbidity should result in an overall improvement in effluent quality.

It is recognized, however, that the disturbance of contaminated sediments may result in the release of other pollutants, predominantly nutrients and hydrocarbons, which do not necessarily associate with fine particles. Thus, if the in-situ sediments contain elevated levels of these contaminants turbidity may be a superficial indicator of effluent quality. Monitoring of effluent should therefore be based on the results of comprehensive elutriate and dry analysis of the sediment to be dredged prior to the commencement of dredging. Testing required under the effluent monitoring program should then focus on those contaminants whose presence in the sediment has been demonstrated. Because of the time delay associated with laboratory analysis and the relatively short duration of dredging (for site SJ-29, typically less than 24 hours of continuous dredge plant operation) the results of this analysis will necessarily determine the continuing permitability of the site for succeeding disposal operations.

Because effluent turbidity is a primary water quality parameter for disposal site operation, compliance with turbidity standards will control both the dredge plant output and the release of effluent. State turbidity standards are expressed in terms of nephelometric turbidity units (NTU), or the degree of transparency of the effluent relative to the transparency of the receiving water. Containment area design guidelines published by the U.S. Army Engineers Waterway Experiment Station (WES) under the Dredged Material Research Program (DMRP) relate containment area performance to the suspended solids concentration of the effluent. The translation of solids concentration, expressed as grams/liter for example, to a measure of turbidity is highly dependent on the characteristics of the suspended material. It would therefore be very useful for the operation of this site, as well as the design and operation of other similar sites, to use the effluent monitoring program in combination with the known sediment characteristics to relate the site design parameter of suspended solids concentration to the state performance criterion of turbidity or transparency. This should be a primary objective of the site monitoring program.

3.5 Groundwater Monitoring

Preliminary sub-surface investigations have documented relatively well-drained conditions for much of site SJ-29. At the specific times and locations sampled, the water table was found at a mean elevation of +6.18 ft NGVD, or approximately 2.12 ft below the undisturbed mean site grade (0.86 ft above the excavated grade). Although the SJ-29 containment basin will impound brackish water pumped from the ICWW in connection with dredging operations for relatively short periods (on the order of 2-3 weeks) once in ten or more years, the possibility exists for chloride intrusion into the shallow aquifer. All potable water for properties adjacent to the site is obtained from deep wells (greater than 300 ft). These wells tap the Floridan aquifer which is geologically isolated from the shallow aquifer. However, water for irrigation may be drawn from the shallow aquifer. Prudence dictates that prior to any construction or disposal activity shallow test wells be sunk within the planned on-site buffer region which separates the containment basin from adjacent properties. Baseline chloride concentrations should then be determined for preconstruction conditions, and a regular monitoring program should be established to document any deviations from these conditions. It should be noted that continuing significant demands placed by adjacent properties on local groundwater supplies could also result in salt water intrusion. Therefore, it is important that an ongoing well monitoring program be kept in place to distinguish any changes in groundwater chloride concentrations which are attributable to the operation of the containment site.

4.0 POST-DREDGING SITE MANAGEMENT

Following the completion of each dredging event the third phase of disposal site operation occurs. This is referred to as the post-dredging phase. It continues until the next maintenance dredging event begins. During the post-dredging phase dredged material deposited within the containment area is managed so as to maximize the rate at which its moisture content is reduced. In so doing the material is made suitable for handling and removal from the site which is a primary objective of the site management plan. However, because of the permanent nature of the SJ-29 disposal site, other management procedures between active dredging operations will also be required. These include a comprehensive monitoring and data collection effort to guide the efficient use and environmental compliance of the disposal area, the handling of stormwater runoff, the monitoring and maintenance of site habitat, mosquito control measures, and the provision for adequate ongoing site security. These are discussed in the following paragraphs.

4.1 Dewatering Operations

Fine sand combined with significant components of organic silt and clay is anticipated to constitute the majority of the sediments to be placed in site SJ-29. This material may prove resistant to drying without the application of some limited dewatering procedures. Those methods which are most appropriate for the quantities of fine material and the thin lifts projected for the site SJ-29 are surface water removal, shallow trenching to promote continued drainage, and mechanical reworking of the dried deposition layer. Each procedure and its specific application to the present situation is discussed below.

The removal of ponded surface water (decanting) is necessary before significant evaporative drying of the fine grained material can occur. However, it is unlikely that all ponded water can be drained from the area of fine material deposition without some excavation to connect the weirs with the ponds which form in depressions in the depositional topography. During this phase of operations, it will be necessary to raise the elevation of the weir crests to prevent the premature release of the remaining ponded water which as a result of the excavation will contain high suspended solids concentrations.

Following the completion of decanting and the removal of all ponded water, a system of drainage trenches will be necessary to continue to lower the moisture content of the deposition layer. The shallow trenching required to adequately drain the relatively thin layers (less than 2 feet) of fine material deposited in the site could best be accomplished by using the Riverine Utility Craft (RUC) developed for the U.S. Navy or a similar amphibious vehicle. However, due to the RUC's very limited availability, it may prove to be more feasible to use conventional low ground pressure equipment to dig the trenches.

Initial trenching should begin immediately following the completion of decanting to drain the remaining ponded water to a sump excavated within the containment area adjacent to the weirs. Water should then be released over the weirs as soon as water quality standards can be met. More intensive trenching should wait until a significant crust (greater than 1-2 inches) has developed on the sediment surface, allowing the formation of desiccation cracks, and retarding additional evaporative drying. A system of radial or parallel trenches should then be constructed to a depth dictated by the resistance to slumping of the semi-liquid layer beneath the crust. As the water table within the deposition layer is lowered by drainage and evaporation and the thickness of the crust increases, the trenches must be progressively deepened. At site SJ-29 it is anticipated that following initial construction of the trenches, deepening will be required no more than two times to provide sufficient drainage for the relatively thin fine sediment deposition layer. Evaporative drying will continue until the crust extends throughout the entire deposition layer.

4.2 Grading the Deposition Material

If the inlet placement strategy discussed in Section 3.2 results in a deposit of fine material of sufficient thickness (greater than 1-2 ft) to allow efficient removal by conventional equipment, this should be done prior to grading. Removal of the fine material at this time offers several advantages. The primary advantage is the segregation of that fraction of sediment which is least desirable for recovery and re-use, thereby rendering the remaining coarser material more marketable. Removal of the fine sediment also prevents the subsequent formation of a depression near the weirs as the finest-grained material which concentrates in this area continues to consolidate under pressure from succeeding deposits. And, while it is not anticipated that the sediment will be found to be significantly contaminated, many commonly occurring contaminants, most notably the toxic metals, exhibit a marked affinity for fine particles, and therefore will tend to be associated with the finer fraction of sediment. Removing this fraction to a landfill for storage or treatment will remove the accumulated contaminants as well.

Grading of the deposition layer should begin as soon as possible following either the completion of dewatering operations or the removal of the fine grained fraction, if appropriate. The grading should consist primarily of distributing the mounded coarser sediment (sand, shell, gravel, etc.) over the remainder of the containment area so as to re-establish the initial uniform 0.2% downward slope from inlet to weir.

4.2.1 Control of Stormwater Runoff

Beyond simply preparing the site for the next disposal operation, as previously discussed (Section 2.1), grading the dewatered deposition layer will accomplish several additional benefits. One is the control and release of stormwater runoff. A shallow and uniform slope toward the weirs will insure adequate drainage and eliminate the ponding of runoff in irregular depressions. It will also minimize flow velocities and the risk of channelization and erosion. In compliance with regulatory policy, a sump or retention area should be constructed adjacent to the weirs of adequate capacity (with the weir flash boards in place) to retain the runoff from the first one inch of rainfall. For the SJ-29 containment basin interior area of 12.38 acres (from the dike crest centerline inward), a retention pond with a minimum capacity of approximately 46,573 ft^3 will be required. This capacity would be provided by a circular basin with a radius of 149 ft and an average depth of 2 ft. However, it is preferable to maintain the weir crests above this minimum elevation. A site operator would then be responsible for the gradual release of the ponded runoff at intervals to be determined by local weather conditions. It may be necessary to provide shallow trenches or swales from the center of the retention basin to one or more weir sections so that the runoff may be quickly and completely released.

As discussed previously (Section 3.1), the clarified run-off will be transported via culvert from the terminus of the outlet manifold to the marsh adjacent to the site (MHW) by the most direct on-site route. However, construction details (required slope, culvert size, etc.) will be deferred to the final design phase.

Additional benefits gained by grading the mounded coarse material over the entire containment basin include providing a free-draining substrate in the area of fine sediment deposition by separating successive depositions of silt and clay, thereby improving subsequent dewatering of this material; and, by distributing the mound of sand, shell, and gravel, re-establishing the effective plan area of the containment basin.

4.3 Material Rehandling/Reuse

As discussed in Section 1.0, site SJ-29 is one of five proposed disposal areas designed to serve the long-term maintenance requirements of the Intracoastal Waterway within St. Johns County. Throughout this report as well as the accompanying permit documentation it has been emphasized that although each site has been designed for a specific service life, it is to be operated as a permanent facility for the intermediate storage and re-handling of dredged maintenance material. This approach to site management obviously requires that at some point the dewatered material be removed from the containment areas for re-use or permanent storage at another location. The determination of the ultimate use of this material is discussed in the following paragraphs.

Based on a comprehensive analysis of dredging records, the bulked disposal volume projected over the 50-year design service life of the five facilities totals over 9 million cubic yards of predominantly fine to medium quartz sand. Although relatively minor by the standards of some dredging operations, this volume still represents a significant quantity of potentially valuable construction material. Even if the possible return on the sale of this material were disregarded, the savings on the cost of permanent storage alone would justify a concentrated effort on the part of the State to determine through a formal market analysis the potential demand for dewatered dredged material.

If such an analysis determines that material resale and/or reuse is practical, it still must be demonstrated that the engineering properties of the dredged material satisfy the requirements of commercial interests. It is anticipated that much of the material can be used 'as is', having been partially segregated through differential settling. However, the feasibility of compartmentalized segregation of material during disposal or mechanical separation following dewatering should be explored if market conditions dictate. Any portions of the material that may be unsuitable for fill or other construction purposes because of organic silt and clay content might be used as capping for landfills, or as agricultural material.

If the market analysis determines that resale or reuse is not feasible, it will be necessary to locate and develop a centralized permanent storage facility. The appropriate location for such a facility would appear to be inland, where lower real estate values and development potential makes permanent storage more economically feasible. The optimal distance from the initial containment area to the permanent storage site would represent a compromise between lower land costs and higher transportation expense.

4.4 Monitoring of Containment Area Performance

Several monitoring programs relevant to site management between successive disposal operations have already been discussed. These include the monitoring of shallow aquifer groundwater for evidence of elevated chloride concentrations attributable to the containment basin and the analysis of the effluent (in this case stormwater runoff) released over the weirs. These programs should continue throughout the service life of the site, although the sampling interval between active disposal operations may be extended to coincide with regular site inspections required to maintain security.

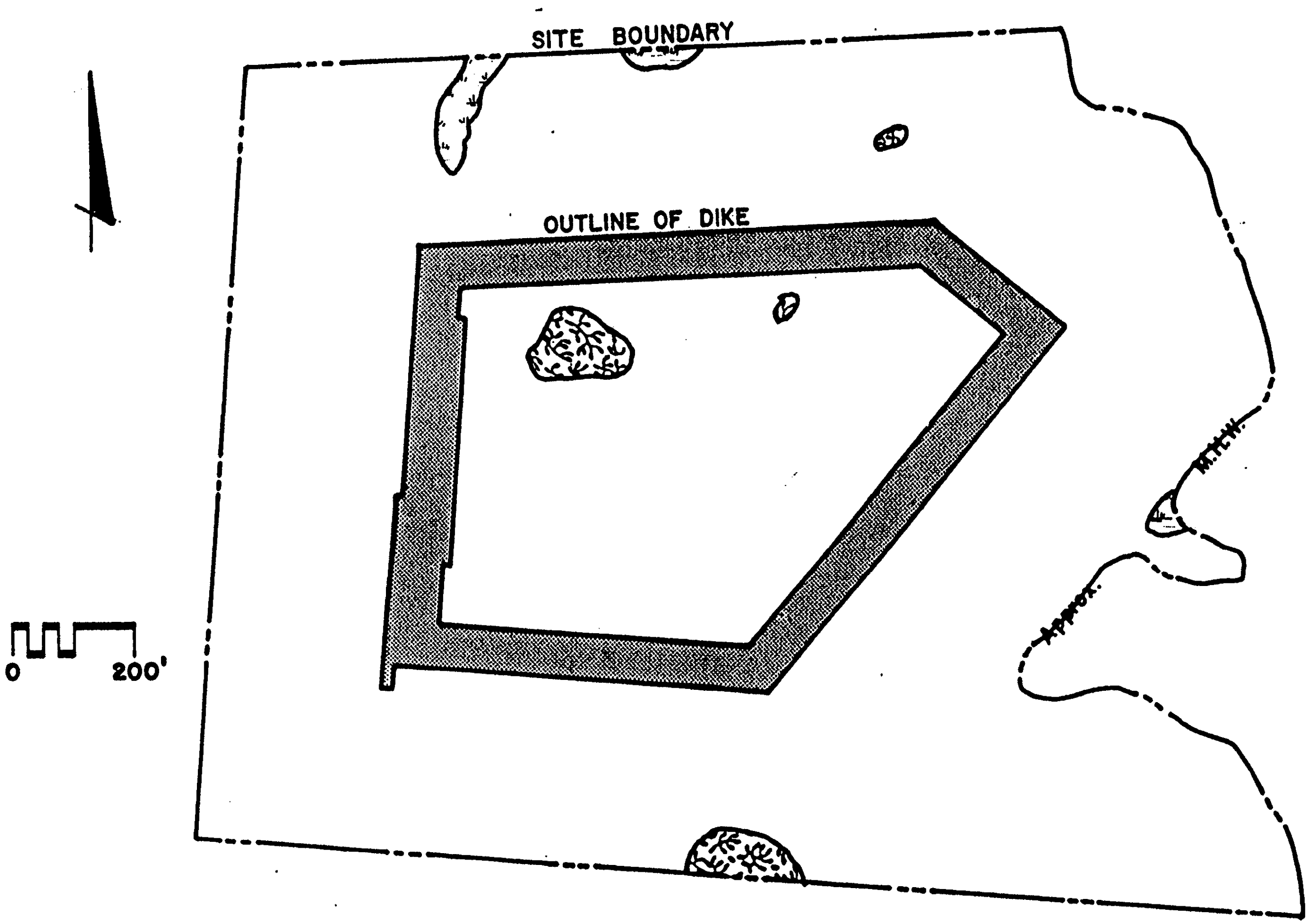
Additional site monitoring in the form of topographic surveys of the containment area deposition surface is also recommended. These surveys consist of three basic types. The first is a post-dredging survey which should be performed as soon as possible following the completion of material dewatering operations and initial grading of the deposition surface. From this a refined estimate of the quantity of material deposited can be obtained. The second type of topographic survey would follow the completion of material removal and related grading operations. Results from this would be used to compute the quantity of material removed and the remaining site capacity. The third type of topographic survey is referred to here as a pre-dredging survey. During periods in which no material is removed between dredging events this survey is recommended prior to the commencement of disposal operations. Results obtained from it, in combination with information obtained from the previous post-dredging survey, can be used to determine the amount of material consolidation which has occurred, and to compute remaining site capacity.

In conjunction with the monitoring of consolidation, a series of core borings performed following the completion of de-watering would further define the progress of consolidation while providing a means to determine the engineering properties of the dewatered material and its suitability for re-use. Samples should be analyzed for grain size distribution, Atterberg limits, moisture and organic content, and other factors which may affect the marketability of the material.

4.5 Monitoring of Habitat and Vegetation

Despite the environmental considerations which have gone into the selection of site SJ-29 and the design of the containment basin, it is clear that the construction and operation of a dredged material disposal facility will have a measurable impact on the habitat and environmental values of the area. The development of the site design and operational guidelines reflect the desire, as well as the permit requirement, to restrict significant adverse impacts related to habitat destruction to the containment area itself (Figure 4-1). Yet even within the containment basin, the destruction of existing habitat is not without some mitigating factors. Experience with similar disposal areas has demonstrated that some shore birds, most notably least terns, favor nesting upon a coarse sandy substrate such as that which will characterize portions of the site interior. This is particularly true in areas such as northeast Florida where development and population growth have reduced other available nesting sites. Moreover, informal surveys of similar existing disposal sites have documented a greater diversity of bird species using the containment area for feeding, foraging, roosting, etc., than adjacent undeveloped areas. These anecdotal reports should be verified through formal monitoring and data collection by qualified biologists, and the observations and recommendations of the monitoring team should guide site management procedures. These recommendations could include, for example, the timing of disposal operations to avoid nesting seasons, or the periodic retention of stormwater runoff to provide forage for wading birds.

Biological monitoring should also extend to the buffer zone which lies outside of the containment area and to the adjacent marshes as well. A comprehensive environmental survey of these areas completed prior to any construction would be required to establish baseline habitat and vegetation conditions. Periodic re-surveys should continue throughout the service life of the site. Degradation of habitat related to the interruption of natural drainage patterns or other aspects of site construction or operations should be noted, corrective action taken, and guidelines developed to minimize further adverse impact. Similarly, any beneficial aspects of site



NOTES :

1. Area of D.E.R. Jurisdictional Wetlands on Site: 0.5 Ac.
   Area of D.E.R. Jurisdictional Wetlands Impacted: 0.0 Ac.
2. Area of Isolated Wetlands on Site: 0.7 Ac.
   Area of Isolated Wetlands Impacted: 0.4 Ac.

LEGEND

DER JURISDICTIONAL WETLANDS

ISOLATED WETLANDS

TAYLOR ENGINEERING INC
9086 CYPRESS GREEN DRIVE
JACKSONVILLE, FLORIDA 32256

Figure 4-1
Disposal Area Wetlands Map
Site SJ-29
St. Johns County, Florida

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management should be recognized and encouraged, and the lessons learned should be applied to the future operation of this and other comparable disposal areas.

4.6 Mosquito Control

The basic approach of the mosquito control program for site SJ-29 will be physical control through the minimization of periods during which standing water exists inside of the containment area. The stage of operation most prone to allow mosquito breeding is the dewatering of sediment when desiccation cracks form in the crust as the fine sediment deposits shrink through evaporative drying. Trenching procedures (Section 4.1) will accelerate the dewatering process by allowing much of the moisture within the cracks to drain to the weirs. However, adverse climatological conditions could delay the dewatering phase long enough to result in successful mosquito breeding within the desiccation cracks. This would require a short-term spray program coordinated through St. Johns County Mosquito Control District.

4.7 Site Security

A key element in the proper management of site SJ-29 is the provision of adequate site security. Because of the necessity of protecting both the public and the disposal facility, security consideration for this site will be similar to those proposed for all other disposal sites within St. Johns County.

Disposal areas have typically been subject to a variety of unauthorized activities including illegal dumping, vandalism, hunting, and the destruction of dikes through the use of off-road vehicles. As discussed previously, the installation of security fencing and the presence of an on-site operator during all phases of active disposal and de-watering should reduce the potential for misuse. However, it is recommended that a mechanism for regular site inspections be established so that misuse can be identified and necessary measures taken. Moreover, all reports of unauthorized activity should be immediately investigated, and if such activity continues, local authorities should be notified.

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APPENDIX IV

ENDANGERED SPECIES CONSULTATION

November 2, 1994

Planning Division
Environmental Branch

Mr. David J. Wesley
Field Supervisor
US Fish and Wildlife Service
Suite 310
6620 Southpoint Drive South
Jacksonville, Florida 32216

Dear Mr. Wesley,

This is in reference to the construction of a new disposal area, Dredged Material Management Area SJ-29 Guana River (See Enclosed Map), in conjunction with maintenance dredging of Reach III of the Intracoastal Waterway in St. Johns County, Florida from the vicinity of Deep Creek in northern St. Johns County to the Bridge of Lions in St. Augustine (ICWW mile 25.47 to mile 37.71).

In accordance with Section 7 of the Endangered Species Act (ESA) we request a list of those species which could be affected by this construction.

If you have any questions concerning this request, please do not hesitate to contact us.

Sincerely,

A. J. Salem
Chief, Planning Division

Enclosure

Copy furnished:
Office of Protected Species, Department of Environmental Protection, ATTN: Mr. Patrick Rose, Tallahassee, Florida 32399

United States Department of the Interior

FISH AND WILDLIFE SERVICE
6620 Southpoint Drive, South
Suite 310
Jacksonville, Florida 32216-0912

NOV 1 6 1994

A. J. Salem, Chief
Planning Division
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

FWS Log No:	1-4-95-066C
Dated:	November 2, 1994
Applicant:	U.S. Army Corps of Engineers
County:	Nassau & St. Johns

Dear Mr. Salem:

Thank you for your letters of 2 November 1994 requesting information on potential impacts from the proposed construction of new disposal areas in conjunction with maintenance dredging of the Intracoastal Waterway.

Section 7 (a)(2) of the Endangered Species Act of 1973, as amended (Act), requires Federal agencies to ensure that their actions do not jeopardize the continued existence of listed species or destroy or adversely modify critical habitat. The Federal agency responsible for authorizing, funding, or implementing an action is required to determine whether listed species, proposed species, critical habitat, or proposed critical habitat may be present in the area that would be influenced by that action. If such species or habitat may be present, the Federal agency is required to determine whether the action may affect such species or habitat. To make such a determination the following information should be included in the biological information report:

1. The results of an on-site inspection of the areas affected by the action.

2. The views of recognized experts on the species at issue.

3. A review of the literature and other information.

4. An analysis of the effects of the action on the species and habitat, including consideration of cumulative effects, and the results of any related studies.

5. An analysis of alternate actions considered by the Federal agency for the proposed action.

If a determination is made that listed species or critical habitat may be affected, the Federal agency must request formal consultation with the Fish and Wildlife Service. If the proposed action is likely to jeopardize the continued existence of proposed species or result in the destruction or adverse modification of proposed critical habitat, the Federal agency must confer with the Fish and Wildlife Service.

If the Federal agency determines that no listed species, proposed species, critical habitats or proposed critical habitats occur in the area of project influence, or there would be no effect on such species or habitats, this office requests the opportunity to review the information on which such determinations are based, and to concur with those determinations.

Section 7(d) of the Act underscores the requirement that the Federal agency and permit or license applicant shall not make any irreversible or irretrievable commitment of resources during the consultation period which, in effect, would deny the formulation or implementation of reasonable alternatives regarding their actions on listed species.

In our review of the project description maps provided, federally listed species may occur in habitats identified by your letters. Data on site specific locations are limited. Understandably, the potential of occurrence increases within habitats designated for listed species, such as the occurrence of the West Indian manatee in the Atlantic Intracoastal Waterway. Therefore, your office may have to make a site specific determination of occurrence. Additionally, we would be concerned with any project-related impacts occurring in wetlands. As per your request, I have enclosed a list of federally designated species for the referenced counties. For additional information, you may wish to contact Mr. Don Wood, Endangered Species Coordinator, Florida Game & Fish Commission, 620 Meridian Street, Tallahassee, FL 32399-1600.

If you have further questions, please contact Marc Epstein at 904-232-2580.

Sincerely yours,

Don Palmer

for Michael M. Bentzien
Acting Field Supervisor

Enclosure

FLORIDA

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES, AND CANDIDATE SPECIES

January 1994

COUNTY: ST. JOHNS

Bat, Rafinesque's Big-eared = Southeastern	*Plecotus rafinesquii*	C2
Bear, Florida Black	*Ursus americanus floridanus*	C2
Bear-grass, Florida	*Nolina atopocarpa*	C2
Bluets, Narrow-leaved	*Hedyotis nigricans* var. *pulvinata*	C2
Butterfly, Sweadner's Olive Hairstreak	*Mitoura gryneus sweadneri*	C2
Coco, Wild (Eulophia)	*Pteroglossaspis ecristata*	C2
Coneflower, Yellow (St. John's Susan)	*Rudbeckia nitida*	C2
Crownbeard, Variable-leaf	*Verbesina heterophylla*	C2
Eagle, Bald	*Haliaeetus leucocephalus*	E
Frog, Florida Crawfish = Gopher	*Rana areolata aesopus*	C2
Jay, Florida Scrub	*Aphelocoma coerulescens coerulescens*	T
Kestrel, Southeastern American	*Falco sparverius paulus*	C2
Ladies-tresses, Green	*Spiranthes polyantha*	C2
Manatee, West Indian	*Trichechus manatus latirostris*	E/CH
Milkweed, Southern	*Asclepias viridula*	C2
Mouse, Anastasia Island Beach	*Peromyscus polionotus phasma*	E
Mouse, Florida	*Podomys floridanus*	C2
Muskrat, Round-tailed	*Neofiber alleni*	C2

FLORIDA

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES, AND CANDIDATE SPECIES

January 1994

Pinesap, Sweet (Pigmy-pipes)	*Monotropsis reynoldsiae*	C2
Plover, Piping	*Charadrius melodus*	T
Rail, Black	*Laterallus jamaicensis*	C2
Skipper, Eastern Beard Grass	*Atrytone arogos arogos*	C2
Snake, Eastern Indigo	*Drymarchon corais couperi*	T
Sparrow, Bachman's	*Aimophila aestivalis*	C2
Spurge, Sand-dune	*Chamaesyce cumulicola*	C2
Sunflower, Lake-side	*Helianthus carnosus*	C2
Stork, Wood	*Mycteria americana*	E
Tortoise, Gopher	*Gopherus polyphemus*	C2
Turtle, Green Sea	*Chelonia mydas*	T
Turtle, Hawksbill Sea	*Eretmochelys imbricata*	E
Turtle, Kemp's Ridley Sea	*Lepidochelys kempii*	E
Turtle, Leatherback Sea	*Dermochrlys coriacea*	E
Turtle, Loggerhead Sea	*Caretta caretta*	T
Woodpecker, Red-cockaded	*Picoides borealis*	E

September 5, 1996

Planning Division
Environmental Branch

Mr. David Hankla
Field Supervisor
U.S. Fish and Wildlife Service
Suite 310
6620 Southpoint Drive South
Jacksonville, Florida 32216

Dear Mr. Hankla:

We want to initiate Endangered Species consultation by this letter for impacts from the construction of a new dredged material placement area, Dredged Material Management Area SJ-29, Guana River (see enclosed Preliminary Environmental Assessment). This facility would be used in conjunction with maintenance dredging of Reach III of the Intracoastal Waterway in St. Johns County, Florida from the vicinity of Deep Creek in northern St. Johns County to the Bridge of Lions in St. Augustine (ICWW mile 25.47 to mile 37.71).

In accordance with Section 7 of the Endangered Species Act (ESA), we have determined there would be no impacts on species listed by your agency. Please concur in that finding.

If you have any questions concerning this request, please do not hesitate to contact us.

Sincerely,

George M. Strain
Acting Chief, Planning Division

Enclosure

Copy Furnished:

Mr. Mike Sole, Office of Protected Species, Florida Department of Environmental Protection, 3900 Commonwealth Boulevard, Mail Station 245, Tallahassee, Florida 32399

bcc:
CESAJ-CO

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
6620 Southpoint Drive South
Suite 310
Jacksonville, Florida 32216-0912

SEP 30 1996

George Strain
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

RE: FWS Log No. 4-1-96-551
Construction of Dredged Material Management Area SJ-29

Dear Mr. Strain:

This letter is in response to your September 5, 1996 request for concurrence with the determination that the above referenced project will have no impacts on Federally listed species. The proposed action is a two phased project to construct an upland dredged material management area in St. Johns County, Florida for the long-term placement of materials dredged from Reach III of the Intercoastal Waterway. Phase I of the proposed project consists of clearing 14.8 acres of the 48.8 acre site. The uncleared acreage would remain intact as a buffer. Phase II consists of the construction of the diked containment facility. Upon review of the Preliminary Environmental Assessment, the Service concurs with the determination that the proposed action is not likely to adversely affect resources protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.).

Although this does not represent a Biological Opinion as described in Section 7 of the Act, it does fulfill the requirements of the Act and no further action is required. If modifications are made in the project or additional information becomes available on listed species, reinitiation of consultation may be required.

Sincerely,

Michael M. Bentzien

Michael M. Bentzien
Assistant Field Supervisor

APPENDIX V

COORDINATION

A combined Public Notice (PN-IWW-215) was released on May 12, 1997 for Dredged Material Management Areas (DMMAs) SJ-20A and SJ-29. The Public Notice was mailed to land owners adjacent to the DMMAs as well as interested State, Federal and local agencies. A number of concerns and comments were received which involved SJ-29. No issues or concerns were raised dealing with the construction of SJ-20A, however.

A copy of the public notice and copies of letters received from the State Historical Preservation Officer and the St. Johns River Water Management District are included in this appendix.